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A Key to the Centipedes of the Chicago Area

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The centipede fauna of the Chicago Area, insofar as present knowledge indicates, is neither unique nor a distinct zoogeographic unit. There is no evidence as yet for regarding this area as a zone of species intergradation, as has been found for many other groups. Recent work (Auerbach, 1951) has demonstrated the need for a key to the known species of chilopods in this region. The key which forms the main portion of this paper is not to be considered definitive in the sense that it contains all the species of centipedes in the area. Future collecting will undoubtedly bring to light species that are new to the region as well as new species *per se.*

Before presenting a key to the centipedes it is desirable that their taxonomic morphology be discussed briefly. The centipedes are divided into two subclasses which are based on the number of legs present on emergence from the egg. The subclass Anamorpha has only seven pairs of legs at hatching; the remaining eight pairs are attained during a series of molts. The subclass Epimorpha has the full adult complement of legs when hatched, varying from 21 to 183 pairs.

The body is long and flattened dorsoventrally. It is distinctly divided into segments. Each segment consists of a tergite, sternite, and two pleura. The legs are inserted at the sides of the body and are widely separated by the sternites (Fig. 1). The genital ducts open on the posterior region of the body, usually on the preanal segment. In the order Lithobiomorpha of the subclass Anamorpha there is a distinct difference in the sexual armature of the two sexes. The female has a pair of jointed gonopodia that terminate in claws. Each gonopod has one or more spines at its base (Fig. *2).* The males, on the other hand, have no such elaborate secondary sexual armature.

The subclass Epimorpha, including the orders Scolopendromorpha and Geophilomorpha, do not have distinctive external sexual features. In the case of scolopendrids careful examination of adult males will usually reveal a small, weakly chitinized aedeagus located just ventrad of the anus, between the last pair of legs. In the geophilids both sexes possess genital appendages or gonopods located posteriad of the last sternite of the body. The male geophilids have either more slender or conical appendages which are further apart and between which the aedeagus is located. In addition the males of some geophilid species have distinctly crassate anal legs. The appendages of the females are flattened and meet in the median line.

The mouthparts especially are used in the taxonomy of the Geophilomorpha. They consist essentially of a labrum, a pair of mandibles, and two pairs of maxillae. The mandibles may be dentate, pectinate, or both. The maxillae are foliaceous structures and are usually regarded as biramous. The second pair of maxillae are leg-like in form, consisting of five or six segments and as a rule the coxae are united on the median line.

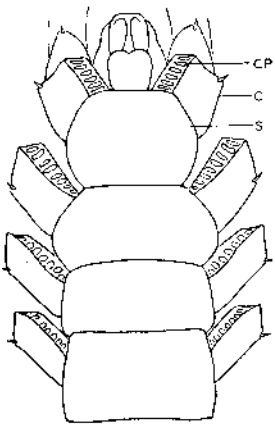
Eyes may be either present or absent; when present, they consist of from one to more than 50 pairs of ocelli. Members of the order Scutigeromorpha possess true compound eyes.

The legs are made up of six segments. These are coxa, trochanter, prefemur, femur, tibia and tarsus. The tarsi usually terminate in one large claw and in many cases one or more minute accessory claws. In the lithobiids the last two pairs of legs, known as the penult and anal respectively, are directed backward and in the case of the males are often greatly modified in form. These modifications include swellings, tubercles, processes, or ridges (see Fig. 3). In this order the arrangement and number of spines on the dorsal and ventral surfaces of each of the leg segments is important in both generic and specific identifications (Fig. 3).

In the lithobiids the tergites are of taxonomic importance as between genera and species in that the tergites may or may not possess posterior prolongations of their posterior angles. For a more complete description of external anatomy the interested reader should consult Williams and Hefner (1928) and Snodgrass (1935).

The centipedes are sometimes subdivided on the basis of the position of the spiracles. In this classification the first division, the Notostigma, includes only the order Scutigeromorpha, of which *Scutigera* is the common genus. These interesting centipedes have only a single dorsal spiracle on each of 7 segments; the spiracles open on the median posterior surface of these tergites. **In** the other division, the Pleurostigma, the spiracles are paired, one spiracle

in each pleuron of certain segments. This division includes the great majority of centipedes.



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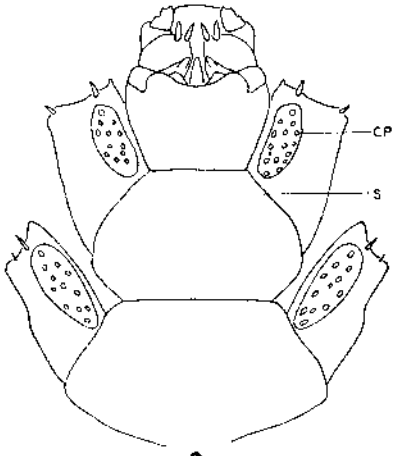

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Figure 1. *Neolithobius voracior* (Chamberlin) male. A schematic ventral view of the posterior half of the body. CP—coxal pores, C—coxa, S—sternite.

Figure 2. *Bothropolys multidentatus* (Newport) female. Schematic ventral view of the posterior section of the body. CP—coxal pores, S—sternite.

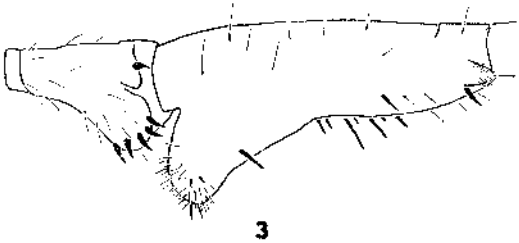

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Figure 3. *Pokabius bilabiatus* (Wood) male. The third and fourth joints of the anal leg. Note the series of spines and setose protuberances.

The following artificial key is designed to separate the species of Chilopoda known at present from the Chicago Area. It is a necessary prerequisite if ecological studies on local centipedes are to be pursued and is in part modified from Chamberlin (1912, 1913, 1922).

1 (2)	Tracheae opening dorsally through 7 unpaired spiracles *Scutigera forceps* (Rafinesque).	
2 (1)	Tracheae paired, opening in pleural region	3
3 (38, 43)	15 pairs of legs present	4

4 (36) Ocelli several to many 5

5 (6) Coxal pores in several series (Fig. 2)
Bothropolys multidentatus (Newport).

6 (5) Coxal pores in a single series (Fig. 1) 7

7 (12) Prosternal teeth 5 + 5 or more (Fig. 4) 8

8 (9) 9, 11, 13th tergites posteriorly produced. Posterior coxae unarmed laterally *Lithobius forficatus* Linné.

9 (8) 7, 9, 11, 13th tergites posteriorly produced. Posterior coxae armed laterally 10

10 (11) Dorsal spines of penult legs 1, 0, 3, 2, 2
Neolithobius tyrannus Bollman.

11 (10) Dorsal spines of penult legs 1, 0, 3, 1, 1 or 1, 0, 3, 2, 1 *Neolithobius voracior* (Chamberlin).

12 (7) Prosternal teeth less than 5 + 5 13

13 (22) Articles of antennae 25-35 14

14 (21) Tergites not posteriorly produced 15

15 (16) Dorsal spines of penult legs 0, 0, 2, 1, 0
Sigibius urbanus Chamberlin.

16 (20) Ventral spines of anal legs 0, 1, 3, 2, 0 or 0, 1, 3, 3, 0 17

17 (16) Dorsal spines of penult legs 0, 0, 3, 1, 0 or 0, 0, 3, 1, 1 18

18 (19) Dorsal spines of penult legs 0, 0, 3, 1, 1
Tidabius anderis Chamberlin.

19 (18) Dorsal spines of penult legs 0, 0, 3, 1, 0
Tidabius suitus (Chamberlin).

20 (16) Ventral spines of anal legs 0, 1, 3, 1, 0
Tidabius tivius (Chamberlin).

21 (14) Tergites 9, 11, 13 sometimes 7, or 6 and 7, posteriorly produced *Paitobius* sp.

22 (13) Antennae with 20 articles, at most 24 23

23 (28) 9, 11, 13th tergites posteriorly produced. Anal legs with 2 or 3 claws 24

24 (25) Anal legs with 3 claws *Sonibius bius* (Chamberlin).

25 (24) Anal legs with 2 claws 26

26 (27) Ventral spines of penult legs 0, 1, 3, 3, 1
Sonibius politus (McNeill).

27 (26) Ventral spines of penult legs 0, 1, 3, 3, 2
Sonibius numius (Chamberlin).

28 (23) Tergites not posteriorly produced 29

29 (32) Fifth joint *of* anal leg of male with crest on dorsal surface of distal end 30

30 (31) Prosternal teeth 3 + 3 or 4 + 4 *Nadabius iowensis* (Meinert).

31 (30) Prosternal teeth 2 + 2 *Nadabius ameles* Chamberlin.

32 (29) Fifth joint of anal leg of male with no crest 33

33 (34) Third and fourth joints of anal legs produced into lobes (Fig. 3) 34

34 (35) Ventral spines of 13th legs usually 0, 1, 3, 3, 2 *Pokabius bilabiatus* (Wood).

35 (34) Ventral spines of 13th legs usually 0, 0, 3, 3, 2 *P. bilabiatus verdescens* Chamberlin.

36 (4) Ocelli only one *Lamyctes* sp. 37

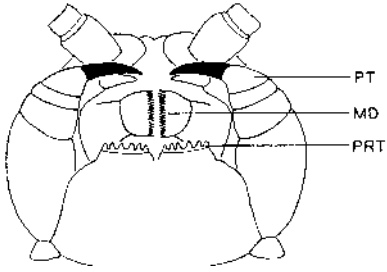

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Figure 4. *Neolithobius voracior* (Chamberlin).
A schematic ventral view of the head. PT—prehensorial teeth, PRT—prosternal teeth, MD—mandibles.

37 (36) Articles of antennae 25 *Lamyctes fulvicornis* Meinert.

38 (43, 3) 21-23 pairs of legs 39

39 (40) 23 pairs of legs *Otocryptops sexspinosus* (Say).

40 (39) 21 pairs of legs 41

41 (42) Last dorsal plate nearly twice as long as penult. Anal legs pincer-like *Theatops spinicaudus* (Wood).

42 (41) Last dorsal plate not longer than penult. Anal legs straight *Cryptops hyalinus* Say.

43 (38, 3) More than 23 pairs of legs 44

44 (45) Mandibles with dentate lamellae and 1 or more pectinate lamellae *Schendyla nemorensis* (C. Koch).

45 (44) Mandibles without dentate lamellae 46

46 (49) Median piece of labrum bearing two conspicuously large, ventrally pointed teeth 47

47 (48) Prehensorial teeth dentate within, extend much beyond front margin of head *Poaphilus kewinus* Chamberlin.

48 (47) Prehensorial teeth not dentate within, do not extend much beyond front margin of head *Soniphilus embius* Chamberlin.

49 (46) Median piece of labrum not bearing two conspicuously large, ventrally pointed teeth 50

50 (56) First maxillae with well developed lappets 51

51 (52) Joints of prehensorial feet not dentate within. Distinct antero-posterior dorsal stripe *Geophilus rubens* Say.

52 (51) Joints of prehensorial feet dentate within 53

53 (55) Anal legs with claws 54

54 (53) Coxapleural pores many, scattered *Pachymerium ferrugineum* (C. Koch).

55 (53) Anal legs without claws. Coxapleural pores opening into two large pits *Arenophilus bipuncticeps* (Wood).

56 (50) First maxillae without lappets. Body tapering toward each end 57

57 (58) Pairs of legs, 47-59 *Linotenia fulva* (Sager).

58 (57) Pairs of legs 37-45 *Linotenia chionophila* (Wood).

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